

CLAIMS

1. A fluid-contactor comprising an element arranged to rotate about a predetermined axis, the element comprising:

a channel extending generally in a spiral about said axis, the channel having a first aperture for the output of a first fluid, a second aperture distant from said axis for the output of a second, more dense, fluid, and at least a third aperture for the input of a fluid to the channel; and

the element being arranged to rotate at an angular velocity sufficient to move second fluid within said channel towards said second aperture.

2. A fluid-contactor as claimed in claim 1, wherein said first aperture is adjacent said axis.

3. A fluid-contactor as claimed in claim 1 or claim 2, wherein said channel extends in a plane substantially perpendicular to said axis.

4. A fluid-contactor as claimed in any one of the above claims, wherein said element is a disc, with said predetermined axis extending through the radial centre of the disc.

5. A fluid-contactor as claimed in any one of the above claims, wherein the channel angle varies along the length of the channel.

6. A fluid-contactor as claimed in claim 5, wherein the channel angle of at least one portion of said channel varies such that the channel does not follow the path of a spiral.

7. A fluid-contactor as claimed in any one of the above claims, wherein the internal width of the channel varies along the length of the channel.

8. A fluid-contactor as claimed in any one of the above claims, wherein at least a portion of the channel is bifurcated, the third aperture for input of a fluid being located on one arm of the bifurcation, and either the first or second aperture for respective output of the first or second fluid being located on a second arm of the bifurcation.
9. A fluid-contactor as claimed in any one of the above claims, wherein one of said fluids is a liquid and the other of said fluids is a gas, a vapour, or an immiscible liquid.
10. A fluid-contactor as claimed in any one of the above claims, wherein, in at least a portion of the channel, the wettability of an internal surface adjacent said predetermined axis is different from the wettability of the facing internal surface on the opposite side of the channel.
11. A fluid-contactor as claimed in any one of the above claims, wherein the fluid-contactor further comprises a temperature control unit arranged to maintain at least a predetermined portion of said channel at a predetermined temperature.
12. A fluid-contactor as claimed in claim 11, wherein said temperature control unit comprises a heater arranged to heat a predetermined portion of said channel.
13. A fluid-contactor as claimed in any one of the above claims, wherein the fluid-contactor is arranged to perform distillation of a fluid mixture, and wherein the third aperture is located along the channel between the first and second apertures, for input of the fluid mixture into the channel, said first and second fluids corresponding to respectively low boiling point and high boiling point fractions of said fluid mixture.
14. A fluid-contactor as claimed in any one of claims 1 to 12, wherein the fluid-contactor is arranged for continuous counter-current contacting, and

wherein the third aperture is located adjacent the second aperture, for input of the first fluid to the channel, the channel further comprising a fourth aperture adjacent the first aperture, for input of the second fluid to the channel.

15. A fluid-contactor as claimed in claim 1, wherein said first aperture is distant from said axis.

16. A fluid contactor as claimed in claim 15, wherein the fluid contactor is arranged for continuous co-current contacting, and wherein the third aperture is located adjacent said axis for the input of the first fluid to the channel, the channel further comprising a fourth aperture adjacent the axis, for input of the second fluid to the channel.

17. A fluid-contactor as claimed in any one of the above claims, wherein at least one of said apertures is connected to a fluid container via a co-axially extending tube.

18. A method of manufacturing a fluid-contactor comprising:
providing an element arranged to rotate about a predetermined axis;
creating a channel in said element extending generally in a spiral about said axis, the channel having at least a first aperture for the output of a first fluid, and at least a second aperture distant from said axis for the output of a second, more dense, fluid; and

a motor arranged to rotate the element at an angular velocity sufficient to move second fluid within said channel towards said second aperture.

19. A method of producing a substance comprising:
providing an element arranged to rotate about a predetermined axis, the element comprising a channel extending generally in a spiral about said axis, the channel having at least a first aperture for the output of a first fluid, and at least a second aperture distant from said axis for the output of a second, more dense, fluid;

the method comprising rotating the element at an angular velocity sufficient to move second fluid within said channel towards said second aperture.